

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A thermal insulating ~~material~~ composite made of ~~non-woven fabric~~ including multiple types of fiber, comprising:

~~a matrix fiber;~~

an interior portion comprised of a matrix fiber and a heat-melting fiber, said matrix fiber and said heat-melting fiber being mixed together to form ~~a composite~~ said interior portion of the thermal insulating ~~material~~ composite and defining air gaps therebetween; and

~~a substantially continuous thin film comprised of said heat-melting fiber fibers~~ fused and bonded together at the ~~an outer~~ surface of said interior portion ~~thermal insulating material~~ whereby the flow of air to the interior portion of said material is blocked by said thin film.

2. (Currently Amended) A thermal insulating ~~material~~ composite comprising a stack of at least two card webs, each of said card webs containing:

~~a matrix fiber;~~

an interior portion comprised of a matrix fiber and a heat-melting fiber, said matrix fiber and said heat-melting fiber being mixed together to form said interior portion of the thermal insulating ~~material~~ composite and defining air gaps therebetween; and

a substantially continuous thin film comprised of said heat-melting fiber fibers fused and bonded together at the an outer surface of each of said interior portions of said card webs whereby the flow of air to the interiors portion of said card webs is blocked by each said thin film, and

each of said card webs having said heat-melting fibers fused together within the card web, whereby said card webs are integrated by the fusing of said heat-melting fibers within the respective card web and between said card webs.

3. (Cancelled)

4. (Withdrawn) A method of manufacturing a thermal insulating material, comprising the steps of:

mixing a matrix fiber with a heat-melting fiber;

forming mixed fibers into a card web; and

heating a the surface of said card web to fuse the heat-melting fiber on the surface of said card web to form a substantially continuous thin film on the surface of said card web.

5. (Withdrawn) A method of manufacturing a thermal insulating material in which two or more card webs, each including multiple types of fiber, are stacked, comprising the steps of:

mixing a matrix fiber with a heat-melting fiber;

forming mixed fibers into a card web;

heating the surface of said card web to fuse said heat-melting fiber on the surface of said card web to form a thin film on the surface of said card web;

stacking two or more of said card webs having undergone the heat treatment in the step of forming said thin film; and

fusing the heat-melting fiber inside said two or more stacked card webs and fusing the heat-melting fiber between said card webs to integrate said card webs.

6. (Withdrawn) The method of claim 5, wherein the fusing of the heat-melting fiber comprises a uniform heating of the stacked card webs.

7. (Currently Amended) The thermal insulating composite material of claim 1, wherein the heat melting fiber has a lower melting point than the matrix fiber.

8. (Withdrawn) The method of claim 4, wherein the heat melting fiber has a lower melting point than the matrix fiber.

9. (New) The thermal insulating composite of claim 2, wherein the heat melting fiber has a lower melting point than the matrix fiber.

10. (New) The thermal insulating composite of claim 1, wherein said matrix fiber comprised of a material selected from the group consisting of aromatic polyester, an aliphatic polyester, a polyolefin, a polyamide, copolymer thereof, or mixtures thereof.

11. (New) The thermal insulating composite of claim 10, wherein said matrix fiber is comprised of a material selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polylactic acid, polycaprolactam, polypropylene, polyethylene, Nylon 6, Nylon 66, copolymers thereof, or mixtures thereof.

12. (New) The thermal insulating composite of claim 1, wherein said heat melting fiber is comprised of a material selected from the group consisting of aromatic polyester, an aliphatic polyester, a polyolefin, a polyamide, copolymer thereof, or mixtures thereof.

13. (New) The thermal insulating composite of claim 12, wherein said heat melting fiber is comprised of a material selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polylactic acid, polycaprolactam, polypropylene, polyethylene, Nylon 6, Nylon 66, copolymers thereof, or mixtures thereof.

14. (New) The thermal insulating composite of claim 2, wherein said matrix fiber comprised of a material selected from the group consisting of aromatic polyester, an aliphatic polyester, a polyolefin, a polyamide, copolymer thereof, or mixtures thereof.

15. (New) The thermal insulating composite of claim 14, wherein said matrix fiber is comprised of a material selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polylactic acid, polycaprolactam, polypropylene, polyethylene, Nylon 6, Nylon 66, copolymers thereof, or mixtures thereof.

16. (New) The thermal insulating composite of claim 2, wherein said heat melting fiber is comprised of a material selected from the group consisting of aromatic polyester, an aliphatic polyester, a polyolefin, a polyamide, copolymer thereof, or mixtures thereof.

17. (New) The thermal insulating composite of claim 16, wherein said heat melting fiber is comprised of a material selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polylactic acid, polycaprolactam, polypropylene, polyethylene, Nylon 6, Nylon 66, copolymers thereof, or mixtures thereof.

18. (New) The thermal insulating material of claim 10, wherein the heat melting fiber has a lower melting point than the matrix fiber.

19. (New) The thermal insulating material of claim 12, wherein the heat melting fiber has a lower melting point than the matrix fiber.

20. (New) The thermal insulating material of claim 14, wherein the heat melting fiber has a lower melting point than the matrix fiber.

21. (New) The thermal insulating material of claim 16, wherein the heat melting fiber has a lower melting point than the matrix fiber.